Stat31120 Syllabus

January
11 **Lec1:** Random Variables and Convergence
13 **Lec2:** Stochastic Process, BM
18 **Lec3:** Ito and Stratonovich Integral
20 **Lec4:** Solvable SDE
25 **Lec5:** Strong and Weak Solution of SDE
27 **Lec6:** Euler method, Strong Convergence
February
1 **Lec7/8:** Numerical Stability; Ito Taylor Expansion: Multiple Stochastic Integrals
3 **Lec9:** Ito Taylor Expansion: General Form
8 **Mid Term**
10 **Lec10:** Strong Approximation of Stochastic Integrals
15 **Lec11:** Strong Schemes with higher order
17 **Lec12:** Mean Square Estimations of Stochastic Integrals
22 **Lec13:** General Strong Convergence Theorem, Stochastic RK Schemes
24 **Lec14:** Implicit Strong Schemes
March
1 **Lec15:** Weak Taylor Approximation
3 **Lec16:** Weak RK, Predictor-Correction Method
8 **Lec17:** Multilevel Monte Carlo path simulation

(This is a proposed schedule.)